



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER OF PATENTS AND TRADEMARKS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/974,843	10/12/2001	Tsuneo Kimura	0171-0789P	7349

2292 7590 05/28/2003

BIRCH STEWART KOLASCH & BIRCH
PO BOX 747
FALLS CHURCH, VA 22040-0747

EXAMINER

ROBERTSON, JEFFREY

ART UNIT	PAPER NUMBER
----------	--------------

1712

DATE MAILED: 05/28/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/974,843

Applicant(s)

KIMURA, TSUNEO

Examiner

Jeffrey B. Robertson

Art Unit

1712

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 March 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1 and 3-16 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-16 is/are rejected.
- 7) ☒ Claim(s) 16 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 6.
- 4) ☐ Interview Summary (PTO-413) Paper No(s): _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Objections

1. Claim 16 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. For claim 16, applicant sets forth that the composition comprises a silanol end-blocked polydimethylsiloxane. However, in claim 10, R² is limited to hydrocarbon groups, thereby precluding the use of silanol end-terminated polydimethylsiloxanes.

Double Patenting

2. Applicant is advised that should claim 7 be found allowable, claim 15 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). Claims 7 and 15 are identical.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the

Art Unit: 1712

invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 10-14, and 16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kimura et al. (U.S. Patent No. 5,733,995) in view of Yanagisawa et al. (U.S. Patent No. 5,231,207) and Arai et al. (U.S. Patent No. 5,286,766).

For claim 10, in column 1, line 65 through column 2, line 25, Kimura teaches an organopolysiloxane composition. In column 4, lines 62-65, Kimura teaches that the composition is a room temperature curing composition. In column 2, lines 30-62, Kimura teaches an organopolysiloxane (general formula (3)) corresponding to formula (1) of applicant's component (A). In column 2, lines 52-57, Kimura specifies that the degree of polymerization is integer of 10 or more, and for claim 16, the viscosity ranges from 25 to 1,000,000 cSt, which includes 700 cSt. In column 2, line 64 through column 3, line 36, Kimura discloses a silane compound that corresponds to applicant's compound (B). For claim 16, Kimura teaches that a preferable example is methyltributoximesilane. This silane satisfies applicant's requirement that any non-hydrolyzable groups are selected from a group that includes methyl and that the hydrolyzable group is a ketoxime group. Note that in Kimura's formula (1), $n=3$ or 4 , which means that there are at least two hydrolyzable radicals present in the silane. Kimura teaches that the amount of the silane present in the composition is 3-20 parts by weight based on 100 parts by weight of the corresponding component (A). This range is encompassed by the range taught for this component in claim 10. In column 3, line 38 through column 4, line 5, Kimura teaches the addition of an amino group containing hydrolyzable silane in an amount of 0.1 to 5 parts by weight. This falls completely within

the range claimed by applicant in claim 10. In Example 1, column 5, lines 9-20, Kimura teaches (N- β -aminoethyl)- γ -aminopropyltrimethoxysilane for this component.

For claims 13 and 14, Kimura teaches in column 4, lines 36-54, that fillers may be added, including silica.

In column 4, lines 7-34, Kimura teaches the presence of a condensation catalyst.

Kimura fails to teach the specific organosilicon compound (C) set forth by applicant containing an aromatic ring-bearing hydrocarbon radical and that the organopolysiloxane (A) is an alkoxy-terminated polysiloxane.

For component (A), Arai teaches a polysiloxane composition in column 2, lines 8-49. This composition is similar to the composition taught by Kimura in that it contains a base polysiloxane, at least two different silanes including a silane containing hydrolyzable groups, fillers, and a condensation catalyst. In column 6, lines 47-49, Arai teaches the presence of adhesion promoting silanes. In column 2, line 56 through column 3, line 53, Arai teaches that the diorganopolysiloxane is substantially linear, and has alkoxy radicals at the chain ends. This falls within applicant's formula (2). Note that here Arai teaches many R groups that fall within applicant's definition of R^1 , such as methyl, ethyl, and phenyl. Inoue teaches in column 7, lines 40-45, that the RTV composition is effective as an adhesive, coating or the like.

Yanagisawa teaches in column 1, line 56 through column 2, line 2, silane compounds that fall within the definition of the compounds set forth by applicant as compound (C). Yanagisawa specifically sets forth the limitation that the aromatic group R^3 in formula (I) corresponds to applicant's R^4 in formula (3). This group is limited to an

Art Unit: 1712

aromatic containing group containing 7-10 carbon atoms where at least one of the amino groups is not bonded directly to the aromatic ring. In column 2, line 58 through column 3 line 16, Yanagisawa sets forth several compounds that fulfill the requirements of claims 11, 12, and 16 such as $(\text{MeO})_3\text{Si}-(\text{CH}_2)_3-\text{NH}-\text{CH}_2-\text{Pn}-\text{CH}_2\text{NH}_2$, where Pn is a phenylene group. Here applicant's R^2 is methyl and R^3 is propylene. For claim 12, applicant's R^4 corresponds applicant's structure (5) of the claim.

Kimura and Yanagisawa are analogous art in that they both teach amino-silanes agents in sealing compositions. Arai is analogous art in that it teaches silane adhesion promoters in room-temperature curing compositions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the hydroxy-terminated polysiloxanes of Kimura with the alkoxy-terminated polysiloxanes of Arai. The motivation would have been that Arai teaches in column 1, lines 14-53, that the silanol-terminated polysiloxanes cause problems in the shelf life of the compositions, and that this problem can be overcome through the use of alkoxy-terminated polysiloxanes. Therefore one of ordinary skill in the art would have substituted the alkoxy-terminated polysiloxanes to improve the shelf life of the compositions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the aminosilane compounds of Yanagisawa into the compositions of Kimura. The motivation would have been that in column 4, lines 25-41, Yanagisawa teaches that the aminosilanes of the patent are useful as silane coupling agents. Yanagisawa teaches that these silane compounds are an improvement over the prior

art agents because they improve thermal stability and moisture resistance. Yanagisawa specifically mentions that the aminosilane compounds of his invention are an improvement over (N- β -aminoethyl)- γ -aminopropyltrimethoxysilane, the compound preferred by Kimura in the examples of the Kimura patent. Since the Kimura compositions are specifically used for automotive oil seals, one of ordinary skill in the art would have desired an improvement in thermal stability and moisture resistance, and substituted the compounds of Yanagisawa in the compositions of Kimura for this purpose.

5. Claims 1, 3-7, and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Fujioka et al. (U.S. Patent No. 5,300,611) in view of Yanagisawa et al. (U.S. Patent No. 5,231,207).

For claims 1, 5, 7, and 15, in column 2, lines 1-47, Fujioka teaches a composition that comprises a hydroxy-terminated polysiloxane (A), a curing catalyst (C), a filler (D), a tertiary silane (E), and an amine-containing silane (F). In column 1, lines 45-66, Fujioka teaches that the composition is used as a sealant to provide moisture resistance to hot water. In column 3, lines 10-34, Fujioka teaches examples of the polysiloxane (A), corresponding to applicant's formula (1), where R^1 =methyl, phenyl, or a substituted alkyl radical. Also, here Fujioka teaches that n, which corresponds to applicant's n, is 100-2000 and that the viscosity ranges from 25-500,000 cSt. This fulfills the limitation that n must be at least 10. In column 8, lines 24-26, Fujioka teaches that 100 parts of the hydroxy-terminated polysiloxane is used. For applicant's component (B), in column 5, lines 6-55, Fujioka teaches silanes that have at least two hydrolyzable alkoxy groups

Art Unit: 1712

are used, where the remaining radicals are vinyl, methyl, ethyl, and phenyl, such as vinyltrimethoxysilane. In column 8, lines 23-46, Fujioka teaches that this component is methyltrimethoxysilane, which is added in an amount of 1.5 parts falling within the range set forth by applicant in claim 1. For applicant's component (C), in column 5, line 56 through column 6, line 43, Fujioka teaches amino-functional silanes are added to the composition as an adhesion promoter. In column 7, lines 17-22, Fujioka teaches that this component is added in an amount of 0.1-5 parts by weight, which is within applicant's range.

For claim 6, in column 4, lines 50-62, Fujioka teaches that silica is a suitable filler.

Fujioka fails to teach the specific aminosilanes set forth by applicant for component (C).

Yanagisawa teaches in column 1, line 56 through column 2, line 2, silane compounds that fall within the definition of the compounds set forth by applicant as compound (C). Yanagisawa specifically sets forth the limitation that the aromatic group R^3 in formula (I) corresponds to applicant's R^4 in formula (3). This group is limited to an aromatic containing group containing 7-10 carbon atoms where at least one of the amino groups is not bonded directly to the aromatic ring. In column 2, line 58 through column 3 line 16, Yanagisawa sets forth several compounds that fulfill the requirements of claims 3, and 4 such as $(MeO)_3Si-(CH_2)_3-NH-CH_2-Pn-CH_2NH_2$, where Pn is a phenylene group. Here applicant's R^2 is methyl and R^3 is propylene. For claim 4, applicant's R^4 corresponds applicant's structure (5) of the claim.

Yanagisawa and Fujioka are analogous art in that they both teach aminosilane compounds as agents in sealing compositions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the aminosilane compounds of Yanagisawa into the compositions of Fujioka. The motivation would have been that in column 4, lines 25-41, Yanagisawa teaches that the aminosilanes of the patent are useful as silane coupling agents. Yanagisawa teaches that these silane compounds are an improvement over the prior art agents because they improve thermal stability and moisture resistance. Yanagisawa specifically mentions that the aminosilane compounds of his invention are an improvement over aminopropyltrimethoxysilane, the compound preferred by Fujioka in the examples of the Fujioka patent (see column 8, lines 24-35 of Fujioka). Since the Fujioka compositions are specifically used for resistance to moisture, particularly of hot water, one of ordinary skill in the art would have desired an improvement in thermal stability and moisture resistance, and substituted the compounds of Yanagisawa in the compositions of Fujioka for this purpose.

6. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujioka et al. (U.S. Patent No. 5,300,611) in view of Yanagisawa et al. (U.S. Patent No. 5,231,207) as applied to claim 1 above, and further in view of Arai et al. (U.S. Patent No. 5,286,766).

For claim 8, Fujioka in view of Yanagisawa et al. teach the limitations of claim 1 as detailed above in paragraph 5. For claim 8, Fujioka in view of Yanagisawa also teaches vinyltrimethoxysilane and the specific aminosilane set forth in the claim as

detailed in paragraph 5. Fujioka in view of Yanagisawa fails to teach that the polysiloxane is a trimethoxysilyl terminated polydimethylsiloxane.

For component (A), Arai teaches a polysiloxane composition in column 2, lines 8-49. This composition is similar to the composition taught by Kimura in that it contains a base polysiloxane, at least two different silanes including a silane containing at least two hydrolyzable groups, fillers, and a condensation catalyst. In column 6, lines 47-49, Arai teaches the presence of adhesion promoting silanes. In column 2, line 56 through column 3, line 53, Arai teaches that the diorganopolysiloxane is substantially linear, and has alkoxy radicals at the chain ends. This falls within applicant's formula (2). Note that here Arai teaches many R groups that fall within applicant's definition of R¹, such as methyl, ethyl, and phenyl. Inoue teaches in column 7, lines 40-45, that the RTV composition is effective as an adhesive, coating or the like. In column 3, lines 44-49, Arai teaches that the viscosity of the polysiloxane is 25-500,000 centistokes. In column 9, lines 20-25, Arai teaches a trimethoxysilyl end-blocked dimethylpolysiloxane with a viscosity of 900 cSt.

Fujioka and Yanagisawa are analogous art in that they both teach amino-silanes agents in sealing compositions. Arai is analogous art in that it teaches silane adhesion promoters in room-temperature curing compositions.

It would have been obvious to one of ordinary skill in the art at the time of the invention to substitute the hydroxy-terminated polysiloxanes of Fujioka with the alkoxy-terminated polysiloxanes of Arai. The motivation would have been that Arai teaches in column 1, lines 14-53, that the silanol-terminated polysiloxanes cause problems in the

shelf life of the compositions, and that this problem can be overcome through the use of alkoxy-terminated polysiloxanes. Therefore one of ordinary skill in the art would have substituted the alkoxy-terminated polysiloxanes to improve the shelf life of the compositions.

7. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Fujioka et al. (U.S. Patent No. 5,300,611) in view of Yanagisawa et al. (U.S. Patent No. 5,231,207) as applied to claim 1 above, and further in view of Inoue et al. (U.S. Patent No. 4,721,765).

For claim 9, Fujioka in view of Yanagisawa et al. teach the limitations of claim 1 as detailed above in paragraph 5. For claim 9, Fujioka in view of Yanagisawa also teaches silanol end-blocked polydimethylsiloxanes that have viscosities between 25 and 500,000 cSt, which includes 700 cSt. vinyltrimethoxysilane and the specific aminosilane set forth in the claim as detailed in paragraph 5. Fujioka teaches in column 5, lines 25-30, and column 3, lines 44-53, that the alkoxy groups can contain propenyl radicals. Fujioka in view of Yanagisawa fails to teach that the silane is vinyltriisopropenoxysilane.

Inoue teaches similar compositions to Fujioka in column 2, lines 3-59 including alkenoxy containing silanes in lines 16-34. Inoue teaches alkenoxysilanes in column 5, lines 1-9, including vinyltriisopropenyloxysilane.

Fujioka, Yanagisawa, and Inoue are analogous art in that they all teach aminosilane compounds as coupling agents in sealing compositions. It would have been obvious to one of ordinary skill in the art at the time of the invention to use vinyltriisopropenyloxysilane as the silane of Fujioka's component (B). Fujioka provides

the express suggestion that propenyl groups may be used as the R⁴ group in the alkoxysilanes of component (B). Therefore, vinyltriisopropenyloxysilane is an equivalent silane for component (B). It is prima facie obvious to substitute equivalents, motivated by a reasonable expectation that the respective species will behave in a comparable manner or give comparable results in comparable circumstances. *In re Ruff* 118 USPQ 343, *In re Jezel* 158 USPQ 99; the express suggestion to substitute one equivalent for another need not be present to render the substitution obvious. *In re Font*, 213 USPQ 532.

Response to Arguments

8. Applicant's arguments filed 3/19/03 have been fully considered but they are not persuasive. In response to applicant's argument that Kimura does not teach the presence of silanes that contain hydrolyzable radicals selected from alkoxy and isopropenoxy radicals, this argument is moot in view of the rejections set forth above.

Regarding applicant's argument that Kimura in view of Yanagisawa does not teach the beneficial feature of adhesion in the event of exposure to hot steam, applicant claims a room temperature curable composition. With respect to claims 10-14 and 16, Kimura in view of Yanagisawa and Arai, teach the composition as detailed above. There is no recitation of excellent adhesion in the presence of hot steam in the claim, and furthermore, the motivation for combining references need not be for the same benefit as set forth by applicant, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art

Art Unit: 1712

cannot be the basis for patentability when the differences would otherwise be obvious.

See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Last, applicant argues that Yanagisawa fails to disclose any applications or that the silicon compound is blended in a room temperature curable composition.

Yanagisawa does disclose the benefit of the particular amino silanes disclosed over specific prior art amino silanes. These prior art silanes are specifically set forth in both Kimura and Fujioka, and thus one of ordinary skill in the art would have been motivated to replace the prior art silanes with the silanes of Yanagisawa to obtain the improved properties related to the use of the silanes of Yanagisawa.

Conclusion

9. Applicant's submission of an information disclosure statement under 37 CFR 1.97(c) with the fee set forth in 37 CFR 1.17(p) on 3/19/03 prompted the new ground(s) of rejection presented in this Office action. In addition, applicant's amendment necessitated the new grounds of rejection presented in this office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP §§ 609(B)(2)(i), 609(B)(2)(ii) (reproduced below).

MPEP 609(B)(2) ii) Final Rejection is Appropriate

The information submitted with a statement under 37 CFR 1.97(e) can be used in a new ground of rejection and the next Office action can be made final, if the new ground of rejection was necessitated by amendment of the application by applicant. *Where the information is submitted during this period with a fee as set forth in 37 CFR 1.17(p), the examiner may use the information submitted, and make the next Office action final whether or not the claims have been amended, provided that no other new ground of rejection which was not necessitated by amendment to the claims is introduced by the examiner.* See MPEP § 706.07(a). (Emphasis added).


Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jeffrey B. Robertson whose telephone number is (703) 306-5929. The examiner can normally be reached on Mon-Fri 7:00-3:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Robert A. Dawson can be reached on (703) 308-2340. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9310 for regular communications and (703) 872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

JBR 
May 23, 2003



Robert Dawson
Supervisory Patent Examiner
Technology Center 1700